MobiDE 2010

Proceedings of the

Ninth ACM International Workshop on Data Engineering for Wireless and Mobile Access

(in conjunction with ACM SIGMOD / PODS 2010)

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Edited by
Hui Lei and Suman Nath

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Foreword

It is our great pleasure to welcome you all to the *Ninth ACM International Workshop on Data Engineering for Wireless and Mobile Access* (*MobiDE'10*), held in conjunction with SIGMOD 2010. MobiDE continues its tradition of bringing together researchers and practitioners in databases, mobile computing, and networking, and providing a full day of exciting presentations and discussions. As in previous years, the workshop serves as a forum to present latest research and engineering results and contributions, and set future directions in wireless and mobile data management.

MobiDE'10 is the ninth of a successful series of workshops that aims to act as a bridge between the data management, wireless networking, and mobile computing communities. The 1st MobiDE workshop took place in Seattle, USA (August 1999), in conjunction with MobiCom 1999. The 2nd MobiDE workshop was held in Santa Barbara, USA (May 2001), together with SIGMOD 2001. The 3rd MobiDE workshop was organized in San Diego, USA (September 2003), co-located with MobiCom 2003. The 4th, 5th, 6th, 7th, and 8th MobiDE workshops took place in Baltimore, USA (June 2005), Chicago, USA (June 2006), Beijing, China (June 2007), Vancouver, Canada (June 2008), and Providence, Rhode Island (June 2009), respectively.

The program of *MobiDE'10* covers a range of topics such as sensing and broadcasting, mobile messaging and overlay, as well as mobile queries and transactions. The workshop program features eleven high-quality papers, with authors from nine countries. In addition, the program includes one keynote speech, by Professor Tarek Abdelzaher from University of Illinois, Urbana-Champaign, USA, with title "Composition Challenges in Large-scale Cyber-physical Systems". These proceedings will serve as a valuable reference point for the latest results on mobile and wireless data engineering.

Many people have contributed to the successful organization of *MobiDE'10*. We thank the authors for providing the content of the program. We owe our sincere gratitude to the members of the Technical Program Committee and external reviewers for their excellent work in reviewing the papers and providing valuable feedback under a tight deadline. We also thank Microsoft for granting us permission to use the Microsoft CMT service and the entire CMT support team, for their help in setting up and managing the online review process.

Our special thanks go to the Publicity Chair Antonios Deligiannakis from Technical University of Crete for his outstanding services in various stages of organizing the workshop. We also thank our Steering Committee members: Le Gruenwald (University of Oklahoma, USA), Yannis Kotidis (Athens University of Economics and Business, Greece), Dik Lun Lee (The Hong Kong University of Science & Technology, Hong Kong), Pedro Josè Marrón (University of Duisburg-Essen and Fraunhofer IAIS, Germany), George Samaras (University of Cyprus, Cyprus), and Demetris Zeinalipour (University of Cyprus, Cyprus). We are also grateful to our sponsors: The Cooperating Objects Network of Excellence (CONET) and IBM Research for the financial support they have provided.

Last, but definitely not least, we want to thank ACM and, in particular, SIGMOD for sponsoring the workshop and SIGMOBILE for supporting it (*MobiDE'10* is sponsored by ACM SIGMOD and held in-cooperation with ACM SIGMOBILE). We would also like to thank Christian Jensen (Aalborg University), the SIGMOD'10 workshops chair, for his guidance and support.

We sincerely hope that you will enjoy the papers presented and that this workshop will provide an opportunity to stimulate interactions among the leading researchers and practitioners from academia and industry.

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Keynote Speech

"Composition Challenges in Large-scale Cyber-physical Systems"

Tarek Abdelzaher (University of Illinois at Urbana Champaign, USA)

Abstract:

Cyber-physical computing envisions a next generation of large distributed systems that are open, highly interconnected, and deeply embedded in the physical world. Such systems have become a research priority in networking and information technology, as recommended by PCAST, the nation's Presidential Council of Advisors on Science and Technology. Research challenges in cyber-physical computing arise from the multiple modalities of system interactions with the physical world, including temporal, functional, and data interactions, as well as from increased system scale. New composition challenges arise as systems grow in size and complexity, making it particularly hard to reason about their overall behavior. This talk discusses the top emerging challenges in cyber-physical systems, with emphasis on those that arise by virtue of scale. Recent research directions and initial solutions are presented to address problems of increasing interest in this realm.

Short Bio:

Tarek Abdelzaher received his B.Sc. and M.Sc. degrees in Electrical and Computer Engineering from Ain Shams University, Cairo, Egypt, in 1990 and 1994 respectively. He received his Ph.D. from the University of Michigan in 1999 on Quality of Service Adaptation in Real-Time Systems. He has been an Assistant Professor at the University of Virginia, where he founded the Software Predictability Group until 2005. He is currently an Associate Professor at the Department of Computer Science, the University of Illinois at Urbana Champaign. He has authored/coauthored more than 150 refereed publications in real-time computing, distributed systems, sensor networks, and control. He is Editor-in-Chief of the Journal of Real-Time Systems, an Associate Editor of the IEEE Transactions on Mobile Computing, IEEE Transactions on Parallel and Distributed Systems, the ACM Transaction on Sensor Networks, and the Ad Hoc Networks Journal. He was Program Chair of RTAS 2004, RTSS 2006, IPSN 2010 and ICDCS 2010, as well as General Chair of RTAS 2005, IPSN 2007, RTSS 2007, DCoSS 2008, and Sensys 2008. Abdelzaher's research interests lie broadly in understanding and controlling performance and temporal properties of networked embedded and software systems in the face of increasing complexity, distribution, and degree of embedding in an external physical environment. Tarek Abdelzaher is a member of IEEE and ACM.